## REMARKS

Claims 24-53 remain in this application. Claims 46-53 have been added. No claims have been cancelled or amended. The Applicants respectfully request reconsideration of this application in view of the above amendments and the following remarks.

### 35 U.S.C. §102(e) Rejection - Kasamatsu

The Examiner has rejected claims 24-25, 27-29, 31-34, 37-39 and 41-42 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,288,833 issued to Kasamatsu (hereinafter referred to as "Kasamatsu"). The Applicants respectfully submit that the present claims are allowable over Kasamatsu.

**Claim 24** recites an apparatus comprising "*a substrate; a waveguide embedded within said substrate, wherein an optical signal may propagate through said waveguide; at least two or more light sources disposed on a first side of said substrate along a length of said waveguide to emit light into said waveguide in a direction substantially transverse to a direction of propagation of the optical signal, the light emitted from said at least two or more light sources to pump the optical signal; a reflector disposed on a second side of said substrate to reflect at least a portion of light emitted from said at least two or more light sources into said waveguide, the reflected light to pump the optical signal*".

Kasamatsu does not teach or suggest either (a) two or more light sources **along a length of said waveguide**, or (b) **light sources to emit light** into the waveguide in a direction that is **substantially transverse** to a direction of propagation of the optical signal.

Firstly, Kasamatsu does not teach or suggest two or more light sources **along a length of said waveguide.** As shown in Figure 3 of the present patent application, a plurality of light sources 150 may be spaced apart along a length of a waveguide 120 in one embodiment of an optical amplifier. Kasamatsu does not teach or suggest two or more light sources along a length of the waveguide. Instead, as shown in FIG. 3A and 5-7 of Kasamatsu, either a single multi-mode semiconductor laser 107 is used as shown in FIG. 3A or else multi-mode semiconductor lasers 19, which are at the end of the waveguide instead of being spaced along a length of the waveguide, may be used as shown in FIGS 5-7. Accordingly, Kasamatsu does not teach or suggest two or more light sources along a length of said waveguide.

Secondly, Kasamatsu does not teach or suggest **light sources to emit light** into the waveguide in a direction that is **substantially transverse** to a direction of propagation of the optical signal. The light that is emitted by the laser is the so-called excitation ray 115 shown in FIG. 4 of Kasamatsu. As clearly shown, the excitation ray 115 is not in a direction that is substantially transverse to a direction of propagation of the optical signal. Instead, the excitation ray is clearly substantially co-propagating with the optical signal. After the excitation ray 115 enters the waveguide 18 reflection forms the propagating excitation ray 17. While Applicants respectfully disagree with the Examiner's interpretation that the propagating excitation ray 17 as substantially transverse, the propagating excitation ray 17 is nevertheless not **emitted by the lasers.** Note that the propagating excitation ray 17 is generated by reflection instead of beign emitted by a laser. In contrast, claim 24 clearly provides that two or more light sources are to **emit** light into said waveguide in a direction **substantially transverse** to a direction of propagation of the optical signal. Accordingly, Kasamatsu does not teach or suggest **light sources to emit light** into the waveguide in a direction that is **substantially transverse** to a direction of propagation of the optical signal.

Anticipation under 35 U.S.C. Section 102 requires every element of the claimed invention be identically shown in a single prior art reference. The Federal Circuit has indicated that the standard for measuring lack of novelty by anticipation is **strict identity**. "*For a prior art reference to anticipate in terms of 35 U.S.C. Section 102, every element of the claimed invention must be identically shown in a single reference.*" In Re Bond, 910 F.2d 831, 15 USPQ.2d 1566 (Fed. Cir. 1990).

For at least these reasons, claim 24 and its dependent claims are believed to be allowable over Kasamatsu.

Independent claims 28, 33, and 39, and their respective dependent claims, are believed to be allowable for similar reasons.

**35 U.S.C. §103(a) Rejection – Kasamatsu and Lange**

The Examiner has rejected claims 26, 30, 36 and 40 under 35 U.S.C. §103(a) as being unpatentable over Kasamatsu in view of U.S. Patent No. 6594,420 issued to Lange (hereinafter "Lange"). Without admitting the appropriateness of combining these two references, the Applicants respectfully submit that the above-identified claims are allowable over any combination of Kasamatsu and Lange.

Kasamatsu does not teach or suggest the limitations of the independent claims. The discussion above is pertinent to this point. Lange does not remedy what is missing from Kasamatsu. This is clearly shown in FIGS. 6, 8, and 10-12 of Lange, in which the pumping energies are not brought in substantially transverse to the direction of propagation of the light in the corresponding waveguides. In fact, a deliberate incident angle is provided to avoid the light from coming in transverse. Neither does Lange teach or suggest a plurality of light sources along a length of the waveguide.

For at least these reasons, claims 24, 28, 33, and 39 and their respective dependent claims are believed to be allowable over any combination of Kasamatsu and Lange, which combination may not even be appropriate.

**35 U.S.C. §103(a) Rejection – Kasamatsu and Lawrence**

The Examiner has rejected claims 35 and 43-45 under 35 U.S.C. §103(a) as being unpatentable over Kasamatsu in view of U.S. Patent No. 6,289,027 issued to Lawrence (hereinafter "Lawrence"). Applicants respectfully submit that the above-identified claims are allowable over any combination of Kasamatsu and Lawrence.

Firstly, Kasamatsu and Lawrence should not be combined. Kasamatsu discusses a waveguide that receives light from the edge and provides light from the edge. Lawrence discusses a waveguide that receives light from the top and couples the light downward into an optical fiber. For at least these reasons, Applicants submit that Kasamatsu and Lawrence should not be combined.

Secondly, even if Kasamatsu and Lawrence are combined, which doesn't even seem appropriate, the combination still does not teach or suggest the limitations of the independent claims. Kasamatsu does not teach or suggest the limitations of the independent claims. The discussion above is pertinent to this point. Lawrence does not remedy what is missing from Kasamatsu. With reference to the embodiment shown in FIG. 3 of the present application, the waveguide may propagate an optical signal along the direction of the illustrated arrows. However, no optical signal is propagated through the overlay waveguides of Lawrence in a direction of propagation that is transverse to light from a light source.

For at least these reasons, claims 24, 28, 33, and 39 and their respective dependent claims are believed to be allowable over any combination of Kasamatsu and Lawrence, which combination does not even seem appropriate.

**Objection to Drawings**

The Examiner has objected to a so-called replacement drawing sheet filed with the amendment dated October 25, 2004. The sheet submitted was not a replacement drawing sheet. Rather, the sheet was a part of the Remarks section of the Response to the Office Action and included a comparison of FIG. 4 of the present application with FIG. 5 of Kasamatsu and with FIG. 10 of Lange. These Figures 4-5 and 10 are not intended to be replacement drawing sheets, as clearly set forth in the Response to the Office Action. Moreover, replacement drawing sheets were filed on April 14, 2005.

## Conclusion

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance. Applicants respectfully request that the rejections be withdrawn and the claims be allowed at the earliest possible date.

## Request For Telephone Interview

The Examiner is invited to call Brent E. Vecchia at (303) 740-1980 if there remains any issue with allowance of the case.

## Request For An Extension Of Time

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

## Charge Our Deposit Account

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 1/17/06

Brent E. Vecchia
Brent E. Vecchia
Reg. No. 48,011

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025-1030
(303) 740-1980